

**DESCRIPTION OF THE PUPAE OF FIVE SPECIES IN THE SUBGENUS
ARMIGERES, GENUS ARMIGERES THEOBALD, WITH A KEY TO SPECIES
OF THE KNOWN PUPAE OF THE SUBGENUS (DIPTERA: CULICIDAE)**

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Abstract.—Descriptions and illustrations of the unknown pupae of *Armigeres* (*Armigeres*) *aureolineatus* (Leicester), *Ar.* (*Arm.*) *durhami* Edwards and *Ar.* (*Arm.*) *kuchingensis* Edwards and the partially described pupae of *Ar.* (*Arm.*) *subalbatus* (Coquillett) and *Ar.* (*Arm.*) *baisasi* Stone and Thurman are presented. A key to 15 species with known pupae of the subgenus *Armigeres* is included.

Key Words: genus *Armigeres*, subgenus *Armigeres*, pupae, key

There are 33 species in the subgenus *Armigeres* Theobald, genus *Armigeres* Theobald. The pupae of only 15 are adequately described (Belkin 1962, Penn 1949, Ramalingam 1972, 1987, Steffan 1968, Toma et al. 1994, 1995) including this work in which the unknown pupae of *Armigeres* (*Armigeres*) *aureolineatus* (Leicester), *Armigeres* (*Armigeres*) *durhami* Edwards and *Armigeres* (*Armigeres*) *kuchingensis* Edwards and partially described *Armigeres* (*Armigeres*) *subalbatus* (Coquillett) and *Armigeres* (*Armigeres*) *baisasi* Stone and Thurman (Delfinado 1966, Baisas 1974, LaCasse and Yamaguti 1950, Bohart and Ingram 1945) are presented.

This work began as a study of the *Armigeres* species occurring in Nepal (Darsie 1998) and the former four species listed above are found there. Pupae of all species of *Armigeres* known from Nepal have now been described, save *Ar.* (*Lei.*) *omissus* (Edwards) which will be described later. Fortuitously, I have the opportunity to describe also the pupa of *Ar.* *baisasi*, occurring only in the Philippines, but belonging to the subgenus treated here.

The identity of *Ar.* *durhami* and *Ar.* *kuchingensis* has been a problem in this study. The first specimens of “*durhami*” studied were from Surat Thani Province, Thailand, located on the southern coastal plain. They were finally identified as *Ar.* *kesseli* Ramalingam. The valid *durhami* is a montane species and the specimens used in the pupal description were collected at Fraser Hill and Cameron Highlands, Malaysia, at elevations above 920 m (Ramalingam 1987).

A more vexing enigma was the identification of *Ar.* *kuchingensis*. According to Thurman (1959), the larval description by Barraud (1934) refers to *Ar.* *durhami*, and in her account, the larva has seta 1-X single, stout and attached to the saddle. My study specimens, loaned through the kindness of Dr. S. Ramalingam, were individually reared, mounted larval and pupal exuviae. The larvae had seta 1-X tiny, 4- to 6-branched, attached at the border or ventral to the saddle. A check of the associated adults, 3♂'s and 2♀'s, confirmed that they indeed were *kuchingensis*. Thurman's description of the larva was taken from Borel (1930) which she had not seen to confirm its identity.

Except for *Ar. baisasi*, these species are widely distributed throughout south and southeast Asia. They breed in a variety of natural and artificial containers, especially cut bamboo nodes.

METHODS AND MATERIALS

The methods are the same as described by Darsie (1998). Those pupae collected in Nepal are in the author's collection at the Florida Medical Entomology Laboratory, Vero Beach, Florida. The others from Brunei, Malaysia, Singapore and Thailand were borrowed from the national mosquito collection at the Walter Reed Biosystematics Unit, Smithsonian Institution, Washington, D.C. and from the private collection of Dr. S. Ramalingam.

The "b" in the descriptions means branches and Le and Pe refers to the exuviae of larvae and pupae.

DESCRIPTIONS

Armigeres (Armigeres) aureolineatus (Leicester)

(Fig. 1)

Position and size of setae as figured; range and modal number of branches in Table 1. *Cephalothorax*: Seta 1-CT with thin branches; 3-CT stout, usually double; seta 7-CT 0.78–0.83 or, as in one specimen, 1.25–1.86 length of 6-CT; trumpet length 0.8–0.93 mm, index 3.0–4.0, pinna 0.12–0.23 of total length. *Abdomen*: Seta 1-II with single short stem, branched in outer 0.8–0.9, 3-6b, 3-II 1.86–2.3 longer than 2-II, 0.89–1.39 length of tergum III; 3-III 0.94–1.0 length of tergum IV; 5-IV 1.0–1.45 longer than tergum V; 5-V 0.9–1.18 length of tergum VI; 6-VI with 4–6 b, stouter than 5-V; 9-VII aciculate, with 9–19 b, all branches without distal branching; 9-VIII aciculate, with 9–15 b. *Paddle*: length 1.02–1.34 mm; index 1.45–1.6; fringe in apical 0.58–0.75 of outer margin, in apical 0.65–0.77 of inner margin, fringe length 0.22 mm; seta 1-P single, 0.40–0.45 length of paddle.

The description is based on the following specimens from Thailand: Nakornayok Province, Hongking, IX-25-63, 2♀ LePe (slides 8567, 8568), 1♂ LePe (slide 8563), ex artificial container; Kanchanburi Province, Saeng, VI-4-65, 1♀ LePe, ex coconut on ground. In Nepal, the only confirmed record is a single larva from SUNSARI, Ghopal, IX-X-84 (Darsie and Pradhan 1990).

Armigeres (Armigeres) durhami EDWARDS (Fig. 2)

Position and size of setae as figured, range and modal number of branches in Table 2. *Cephalothorax*: Setae 1, 3-CT stout, 1 single, 3 double; 7-CT 0.46–0.61 length of 6-CT, with 2–5 b; trumpet length 0.65–0.82 mm, pinna 0.23–0.39 total length; index 2.12–2.61. *Abdomen*: Seta 1-II pedunculate, brush-like, with 17–27 b in outer 0.65–0.77; 3-II 2.02–3.04 length of 2-II; 0.95–1.08 length of tergum III; 3-III 0.90–1.15 length of tergum IV; 5-IV 1.19–1.41 length of tergum V; 5-V 1.16–1.31 length of tergum VI; 6-VI single to triple, stouter than 5-V, except in one specimen in which 6-VI was poorly developed; 9-VII aciculate, stout, with 3–5 b; 9-VIII aciculate, stout, with 7–10 b. *Paddle*: ovoid, emarginate apically, length 1.11–1.31 mm, index 1.15–1.35, fringe on outer margin in apical 0.48–0.57, on inner margin in apical 0.31–0.59, fringe length 0.17–0.22 mm; 1-P single, 0.24–0.40 length of paddle.

The description is based on the following specimens from Malaysia: Pahang, Cameron Highlands, 1970, 1♀, 1♂ LePe (Nos. 1511–10, 11); Fraser's Hill, 1970, 1♀, 2♂ LePe (Nos. 787–36, 40, 88). Nepal specimens without immatures are recorded from Makwanpur District, Hetaura, I-90, 1♀; Sunsari District, Bhotepur, IX-X-83, 2♀; Manglabre, IX-X-83, 2♀; Morang District, Dubai, IX-X-85, 1♀ (Darsie and Pradhan 1990).

Armigeres (Armigeres) kuchingensis EDWARDS (Fig. 3)

Position and size of setae as figured; range and modal number of branches in Ta-

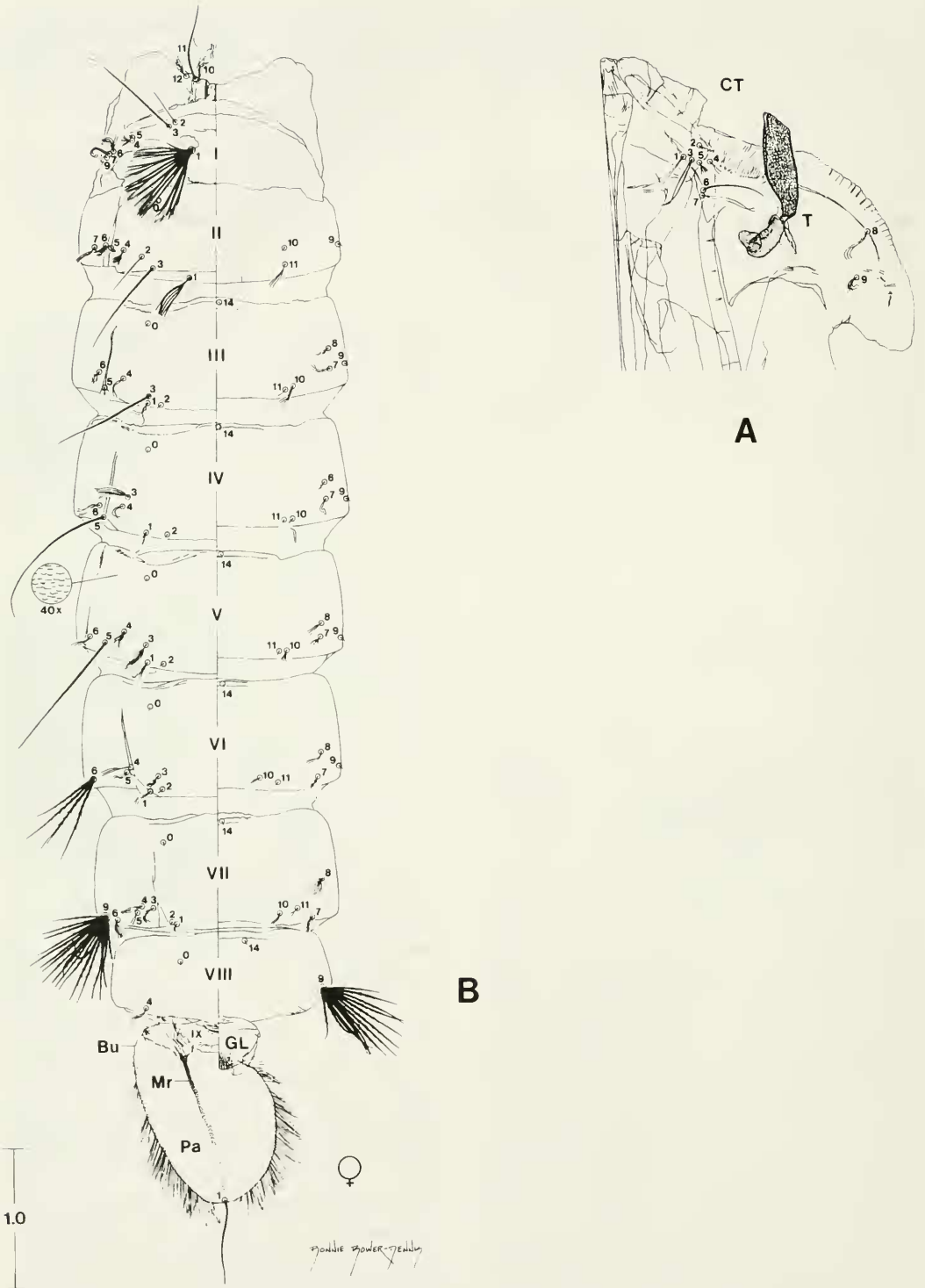


Fig. 1. Pupa of *Armigeres aureolineatus*. A, Cephalothorax. B, metanotum and abdomen. Abbreviations: Bu = external buttress; CT = cephalothorax; GL = genital lobe; Mr = midrib; Pa = paddle; T = trumpet.

Table 1. Pupal chaetotaxy of *Armigeres aureolineatus*.

Seta	Cephalothorax	Abdominal Segments							
		I	II	III	IV	V	VI	VII	VIII
0	—	—	1	1	1	1	1	1	1
1	1-2 (2) ¹	10-12 (11)	3-6 (5)	1-4 (4)	3-5 (4)	3-6 (4)	3-6 (3)	1-4 (2)	—
2	2-5 (3)	1	1	1-2 (1)	1	1	1	1	—
3	1-2 (2)	1	1	1-4 (1)	4-6 (6)	4-7 (7)	1-6 (4)	3-5 (3)	—
4	2-6 (2)	5-9 (?)	4-14 (5)	2-3 (2)	1-2 (2)	4-11 (?)	2-9 (6)	2-6 (5)	3-5 (4)
5	4-8 (5)	1-2 (1)	3-4 (3)	1-3 (3)	1	1	1-4 (3)	2-3 (3)	—
6	1	3-8 (5)	3-8 (4)	3-6 (5)	3-4 (4)	3-5 (5)	4-6 (4)	2-6 (5)	—
7	1-2 (2)	2-4 (4)	2-6 (?)	1-4 (3)	1-3 (2)	3-8 (6)	2-7 (?)	3-7 (6)	—
8	2-5 (?)	—	2	2-6 (4)	1-3 (3)	2-3 (3)	2-4 (3)	5-8 (7)	—
9	3-4 (4)	1	1	1	1	1	1	9-12 (10)	9-15 (10)
10	2-5 (4)	—	1-4 (1)	2-4 (4)	2-4 (3)	2-3 (3)	1-4 (3)	2-4 (2)	—
11	1	—	1-3 (2)	1	1	1	1	1-3 (2)	—
12	3-7 (5)	—	—	—	—	—	—	—	—
14	—	—	—	1	1	1	1	1	1

¹ Range followed in parentheses by the mode.

ble 3. *Cephalothorax*: Setae 1, 3-CT long, stout, 1 single, 3 single or double; 7-CT 0.55-1.6 length of 6-CT, usually double; trumpet length 0.42-0.54 mm, pinna 0.04-0.22 total length, index 1.68-2.25. *Abdomen*: Seta 1-II small with thin branches, 2- to 7-branched; 3-II 3.0-4.23 longer than 2-II, 3-II 1.03-1.15 length of tergum III; 3-III 1.04-1.19 length of tergum IV; 5-IV 0.96-1.10 length of tergum V; 5-V 0.92-1.10 length of tergum VI; 6-VI single, stouter than 5-V; 9-VII stout, aciculate, usually double (2-4); 9-VIII stout, aciculate, with 6-9 b, some branches of 9-VII, VIII divided apically. *Paddle*: ovoid, slightly emarginate apically, length 0.85-1.10 mm, index 1.24-1.46; fringe on outer margin on apical 0.43-0.60, inner margin on apical 0.40-0.66; fringe length 0.12-0.16 mm; seta 1-P strong, 0.23-0.40 length of paddle.

The description is based on the following specimens: Singapore Island, 1970?, 1♀, 1♂ LePe, (Nos. 1200-10, 18); Brunei, Belait District, 1970, 1♀, Pe, 2♂ LePe (Nos. 1295-19, 1312-15, 1341-102). Nepal specimens have been collected Rupandehi District, Bhairahawa, IV-7-88, 1♂ (Darsie and Pradhan 1990); Makwanpur District, Hetaura, VI-VII-55, 2♀; Nayagaon, I-V-55, 1♀ (Peters and Dewar 1955).

Armigeres (Armigeres) subalbatus
(Coquillett)
(Fig. 4)

Position and size of setae as figured; range and modal branching in Table 4. *Cephalothorax*: Setae 1, 3-CT stout, double; 7-CT 0.58-0.81 length of 6-CT; trumpet length 0.36-0.50 mm, pinna 0.11-0.30 of total length, index 1.0-1.72. *Abdomen*: 1-II branched from base, 8-13 b; 3-II 1.63-1.90 length of 2-II; 3-II 1.05-1.20 length of tergum III, 3-III 1.04-1.26 of tergum IV, 5-IV 1.32-1.39 of tergum V, 5-V 0.98-1.28 of tergum VI; 6-VI single, rarely double, thicker than 5-V; 9-VII with 3-7 b, some branches shorter; 9-VIII with 9-14 b, outer branches shorter. *Paddle*: ovoid, emarginate apically, length 0.93-1.17 mm, fringe of outer margin on apical 0.51-0.81, of inner margin, on apical 0.23-0.53; index 1.16-1.35, fringe length 0.15-0.18 mm; 1-P single or seldom double, 0.33-0.43 length of paddle.

The description is based on the following specimens from Nepal: Kaski District, Pokhara, Male Patan, VII-27-92, 3♀ Pe, 1♂ Pe, ex treehole; Pokhara, VII-28-92, 1♂ Pe, ex bamboo stump; Pokhara, Lamachaur, VII-29-92, 1♀ Pe, ex bamboo stump.

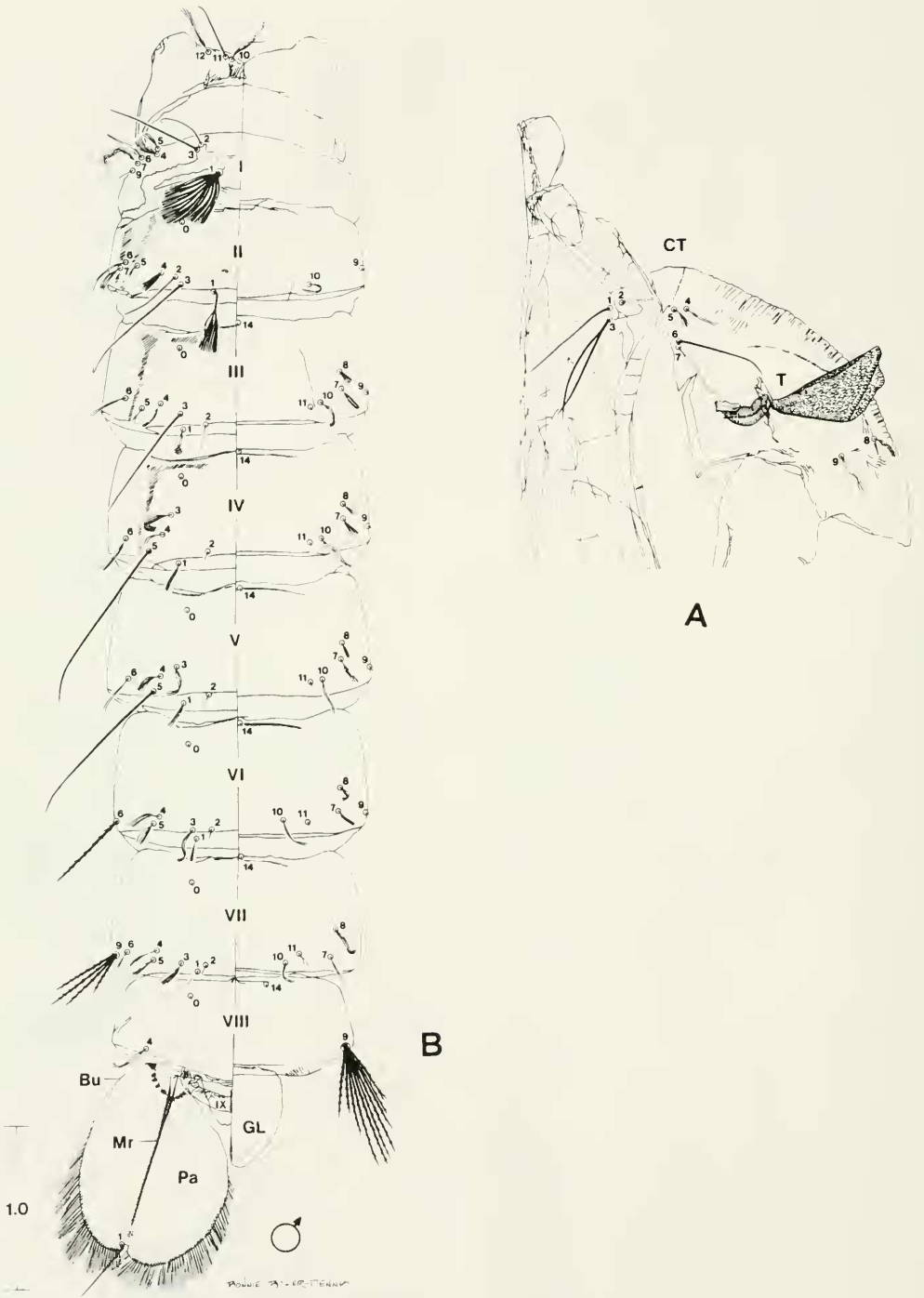


Fig. 2. Pupa of *Armigeres durhami*. A. Cephalothorax. B. Metanotum and abdomen. For abbreviations see Fig. 1.

Table 2. Pupal chaetotaxy of *Armigeres durhami*.

Seta	Cephalothorax	Abdominal Segments							
		I	II	III	IV	V	VI	VII	VIII
0	—	—	1	1	1	1	1	1	1
1	1	9-11 (10)	17-26 (?)	2-5 (4)	2-6 (3)	2-6 (3)	1-5 (3)	1-4 (1)	—
2	2-5 (3) ¹	1	1	1	1	1	1	1	—
3	2	1	1	1	2-7 (5)	2-5 (4)	2-5 (3)	1-6 (2)	—
4	2-5 (3)	5-8 (6)	5-8 (6)	2-5 (4)	2-4 (4)	3-7 (6)	2-5 (2)	2-4 (3)	1-4 (2)
5	3-7 (5)	1-3 (1)	2-3 (2)	1-5 (4)	1	1	1-4 (1)	1-3 (3)	—
6	1	2-4 (2)	2-4 (3)	2-5 (2)	2-4 (3)	1-4 (3)	1-3 (1)	1-4 (2)	—
7	2-5 (2)	3-5 (5)	4-7 (4)	2-5 (4)	3-5 (5)	4-7 (4)	2-4 (3)	1-2 (2)	—
8	2-5 (3)	—	—	2-5 (3)	2-4 (3)	3-5 (3)	3-5 (3)	3-4 (3)	—
9	2-6 (4)	1	1	1	1	1	1	3-4 (4)	7-12 (9)
10	5-8 (5)	—	2-3 (2)	2-5 (3)	2-4 (3)	2-3 (3)	2-3 (2)	1-3 (1)	—
11	1	—	—	1	1	1	1	1-2 (2)	1-2 (2)
12	3-5 (4)	—	—	—	—	—	—	—	—
14	—	—	—	1	1	1	1	1	1

¹ Range followed in parentheses by mode.

Armigeres (Armigeres) baisasi STONE AND THURMAN (Fig. 5)

Position and size of setae as figured; range and modal number of branches in Table 5. *Cephalothorax*: Seta 1-CT and 3-CT long, stout, 1 single, 2 usually double; 7-CT 0.54-0.82 length of 6-CT; trumpet length 0.63-0.75 mm, pinna 0.22-0.44 total length; index 1.96-2.27. *Abdomen*: Seta 1-II pedunculate, with 3-4 main stems, each with 2-8 branches in apical 0.14-0.43, totalling 10-18 b; 3-II 1.59-1.83 longer than 2-II, 0.95-1.07 length of tergum III; 3-III 0.96-1.11 length of tergum IV; 5-IV 1.14-1.34 length of tergum V; 5-V 0.89-1.38 length of tergum VI; an adventitious seta marked (A) found in one specimen just anterior to seta 5-V, see Fig. 5; 6-VI aciculate, single or double; 9-VII aciculate, with 2-5 b; 9-VIII aciculate, with 6-8 b. *Paddle*: ovoid, emarginate apically, length 0.90-1.24 mm, index 1.06-1.37, fringe on apical 0.32-0.68 of outer and on 0.36-0.52 of inner margins, fringe length 0.13 mm; 1-P strong, 0.26-0.31 length of paddle.

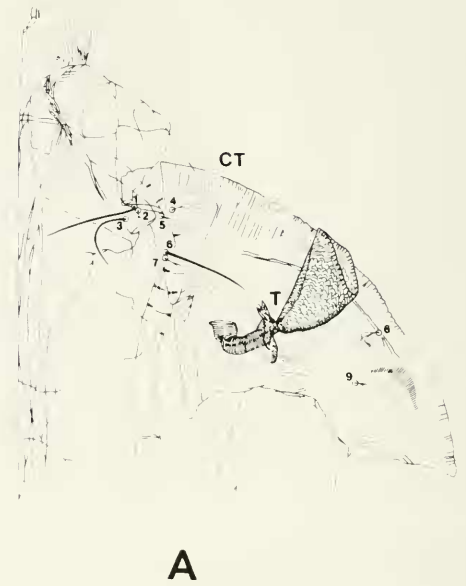
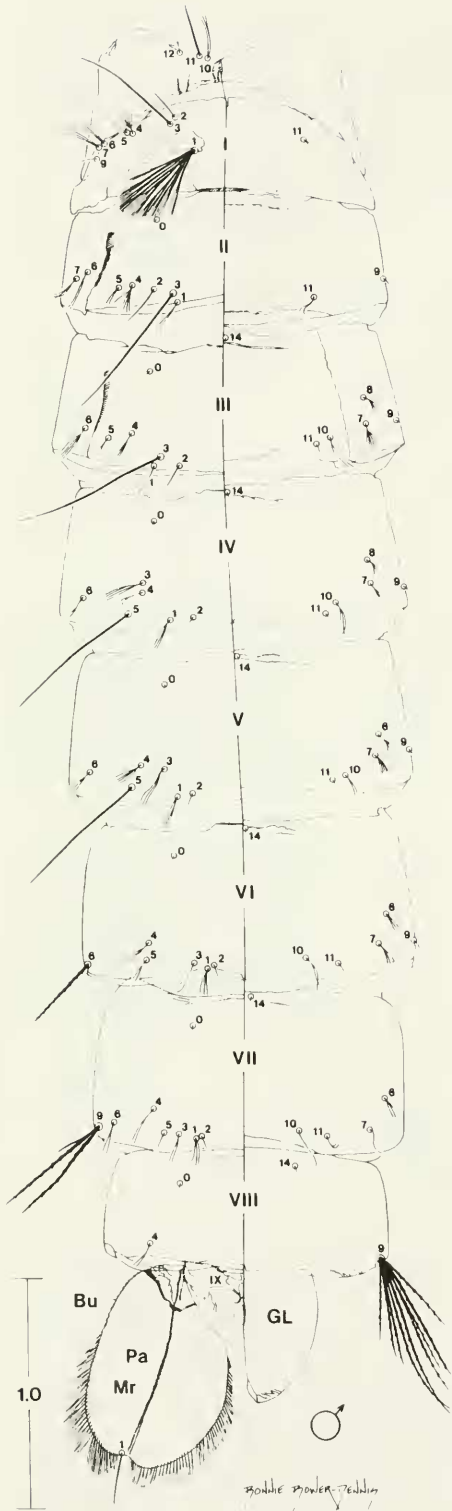
The description is based on the following specimens from the Philippines: Palawan,

Puerto Princesa, IX-20-45, 1♂ LePe, ex coconut shell (No. P-307, 19th MGL); Davao, Lasang, V-7-46, 1♀ LePe, ex coconut husk (No. P-945-3) (J. Enke and H. Hoogstraal); without locality data, 1♀ LePe (No. 2010-15).

KEY TO THE KNOWN PUPAE OF THE SUBGENUS *ARMIGERES*, Genus *ARMIGERES*

Key formulated partly using key of Stefan (1968), descriptions by Ramalingam (1972, 1987), Toma et al. (1994, 1995) and descriptions herein.

- 1. Paddle without seta; seta 7-CT shorter than seta 6-CT 2
- Paddle with strong seta; seta 7-CT subequal to, or longer than, 6-CT 3
- 2(1). Setae 3-II, III and 5-IV, V shorter than 0.25 length of following tergum *theobaldi* Barraud
- Setae 3-II, III and 5-IV, V subequal to length of following tergum *alkatirii* Toma, Miyagi and Syafuruddin
- 3(1). Paddle fringe on external margin extending to near base 4
- Paddle fringe on external margin on apical 0.75 or less 5
- 4(3). Seta 1-P usually triple; seta 6-VI mostly with more than 2 branches *malayi* (Theobald)
- Seta 1-P usually double; seta 6-VI usually



A

B

Table 3. Pupal chaetotaxy of *Armigeres kuchingensis*.

Seta	Cephalothorax	Abdominal Segments							
		I	II	III	IV	V	VI	VII	VIII
0	—	—	1	1	1	1	1	1	1
1	1	3-8 (6)	2-7 (3)	1-5 (4)	2-5 (3)	2-4 (3)	2-6 (4)	2-5 (3)	—
2	1-3 (3) ¹	1	1	1	1	1	1	1	—
3	1-2 (1)	1	1	1	4-8 (4)	2-4 (2)	1-3 (3)	2-3 (2)	—
4	2-3 (3)	4-9 (5)	4-6 (6)	2-5 (3)	2-4 (2)	3-6 (4)	1-3 (3)	2-3 (2)	2-3 (2)
5	2-4 (3)	1-3 (2)	1-2 (2)	1-3 (1)	1	1	1-3 (2)	1-3 (1)	—
6	1	3-7 (3)	2-8 (3)	2-8 (3)	2-4 (3)	1-6 (3)	1	1-5 (2)	—
7	1-3 (2)	1-9 (2)	3-7 (4)	2-8 (?)	2-4 (3)	3-6 (5)	2-3 (3)	1-2 (2)	—
8	2-4 (3)	—	—	3-4 (3)	3-4 (3)	2-4 (4)	3-4 (4)	3-6 (3)	—
9	2-3 (3)	1-2 (1)	1	1	1	1	1	2-4 (2)	6-9 (8)
10	2-4 (3)	—	2-4 (2)	2	2	2-4 (4)	1-3 (2)	1-4 (1)	—
11	1	—	1-4 (3)	1-3 (1)	1-2 (1)	1-2 (1)	1-2 (1)	1-2 (1)	—
12	1-4 (2)	—	—	—	—	—	—	—	—
14	—	—	—	1	1	1	1	1	1

¹ Range followed in parentheses by mode.

- single or double, rarely triple
- 5(3). *breinli* (Taylor)
- Seta 1-CT with branches thin, usually double; seta 9-VII with 9 or more branches *aureolineatus* (Leicester)
- Seta 1-CT very stout, single or double; seta 9-VII with 8 or fewer branches 6
- 6(5). Seta 1-CT with 2 or more branches; seta 3-CT with 3 or more branches; seta 1-II less than 0.5 length of 3-II
- *papuensis* Peters
- Seta 1-CT mostly single; seta 3-CT single or double; seta 1-II 0.5 or more length of 3-II (except *kuchingensis*) 7
- 7(6). Seta 1-II pedunculate, brush-like, with single main stem, branched at least in apical 0.5 8
- Seta 1-II branched from near base, if somewhat pedunculate, with 2-3 main stems 9
- 8(7). Seta 10-VI usually double; trumpet length 0.58 mm *kinabaluensis* Ramalingam
- Seta 10-VI usually single; trumpet length 0.65 or greater *durhami* Edwards
- 9(7). Seta 7-CT generally 3-branched; seta 6-VI no stouter than 5-V *lacuum* Edwards
- Seta 7-CT usually single or double; seta 6-VI stouter than 5-V 10
- 10(9). Seta 1-II small, branches thin, 0.36 or less length of seta 3-II *kuchingensis* Edwards
- Seta 1-II large, branches strong, 0.5 or more length of seta 3-II 11
- 11(10). Seta 9-VII with some branches split beyond middle; seta 2-I about 0.7 length of 3-I *denbesteni* Brug
- Seta 9-VII with branches simple; seta 2-I about 0.5 or less length of 3-I 12
- 12(11). Seta 1-II pedunculate, with 2-3 main stems, branched in apical 0.7-0.9 *baisasi* Stone and Thurman
- Seta 1-II with single main stem or subpedunculate, usually branched from near base 13
- 13(12). Trumpet index 1.7 or less, length 0.5 mm or less, *subalbatus* (Coquillett)
- Trumpet index 2.3 or more, length 0.51 mm or more, 14
- 14(13). Seta 9-VII with 3-4 branches; seta 7-CT less than 0.5 length of 6-CT; pinna 0.5 length of trumpet *milnensis* Lee
- Seta 9-VII with 5 or more branches; seta 7-CT more than 0.5 length of 6-CT; pinna 0.4 length of trumpet *kesseli* Ramalingam

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Fig. 3. Pupa of *Armigeres kuchingensis*. A, Cephalothorax. B, Metanotum and abdomen. For abbreviations, see Fig. 1.

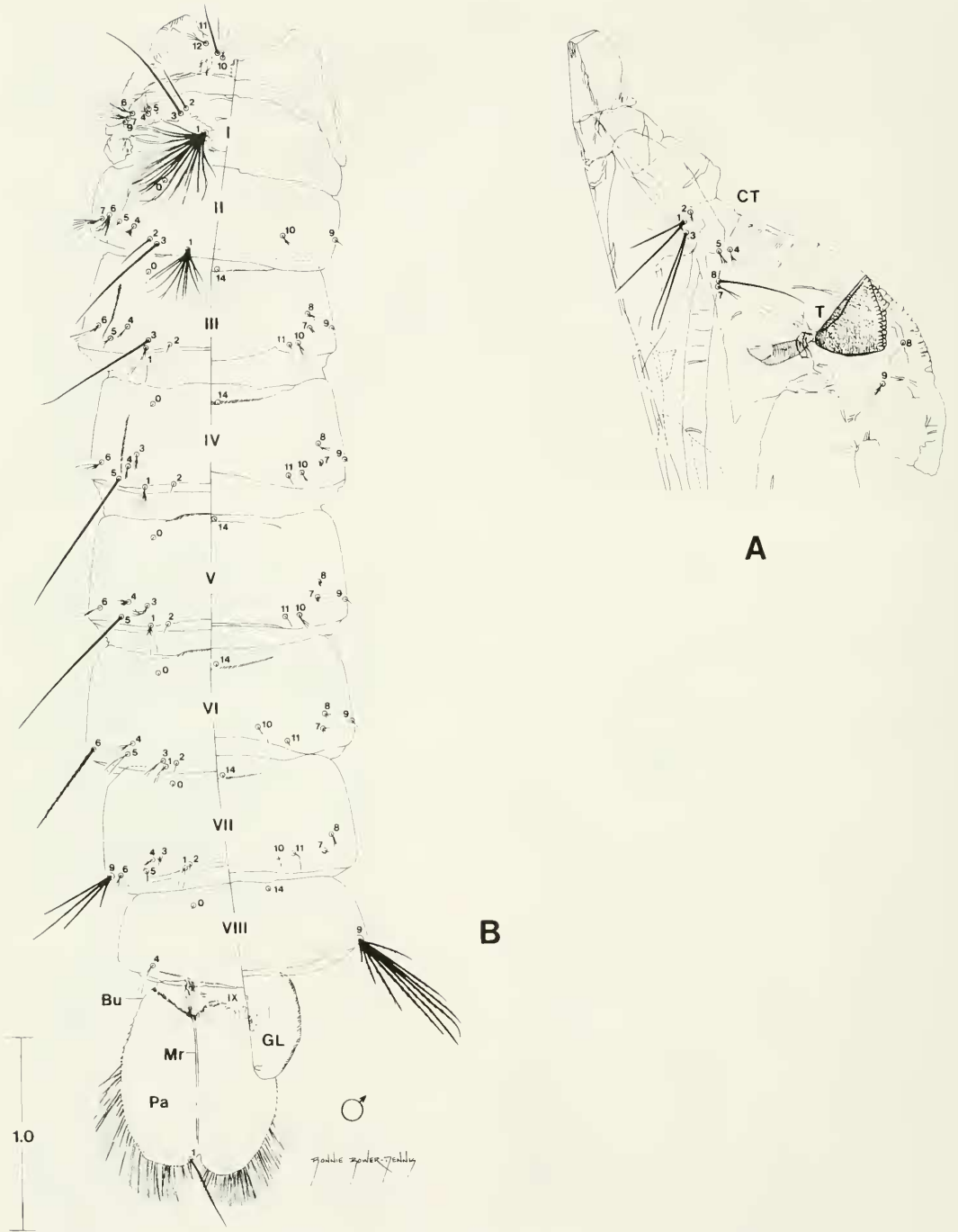


Fig. 4. Pupa of *Armigeres subalbatus*. A, Cephalothorax. B, Metanotum and abdomen. For abbreviations see Fig. 1.

Table 4. Pupal chaetotaxy of *Armigeres subalbatus*.

Seta	Cephalothorax	Abdominal Segments								
		I	II	III	IV	V	VI	VII	VIII	
0	—	—	1	1	1	1	1	1	1	1
1	2	8-12 (9)	8-13 (9)	2-6 (4)	4-7 (5)	4-7 (6)	2-4 (3)	2-3 (2)	—	—
2	2-4 (2) ¹	1	1	1	1	1	1	1	—	—
3	2	1	1	1	3-6 (4)	2-5 (4)	2-4 (2)	2-5 (2)	2-3 (3)	—
4	2-4 (4)	4-9 (5)	4-8 (6)	2-4 (3)	2-5 (3)	3-6 (4)	2-6 (4)	1-4 (2)	—	—
5	3-5 (4)	1-4 (3)	1-3 (2)	1-3 (3)	1-2 (1)	1-2 (1)	2-4 (2)	1-3 (2)	—	—
6	1	3-7 (6)	3-8 (4)	3-6 (4)	3-6 (?)	2-6 (5)	1-2 (1)	2-4 (3)	—	—
7	2-3 (2)	2-6 (3)	4-7 (6)	3-5 (4)	3-6 (4)	4-7 (6)	3-5 (4)	1-2 (2)	—	—
8	1-3 (3)	—	—	3-4 (3)	2-5 (3)	3-4 (3)	3-5 (3)	2-6 (3)	—	—
9	2-5 (3)	1-3 (2)	1	1	1	1	1	3-7 (?)	9-14 (10)	—
10	2-4 (4)	—	1-4 (3)	2-5 (3)	2-3 (3)	2-3 (3)	1-3 (2)	1-3 (2)	—	—
11	1	—	—	1	1	1	1	1-3 (2)	—	—
12	3-4 (3)	—	—	—	—	—	—	—	—	—
14	—	—	—	1	1	1	1	1	1	1

¹ Range followed in parentheses by mode.

PUPAL CHARACTERS FOR THE GENUS AND SUBGENERA

Genus *Armigeres* presently has 48 species, 33 in subgenus *Armigeres* and 15 in subgenus *Leicesteria*. Pupae have been adequately described for 15 species of subgenus *Armigeres* and 7 of subgenus *Leicesteria* (including *Ar. omissus*, description pending). These 22 descriptions offer an opportunity to formulate tentative pupal characters to distinguish the genus and subgenera. Belkin (1962), Definado (1966), Thurman (1959), and Mattingly (1971, by virtue of his generic key to pupae), have mentioned generic characters. The former three mention that they resemble *Aedes* pupae and that they have a paddle fringe. Only Belkin also noted the following: seta 8-C caudad of the trumpet base, setae 5-VI, VII very small and 4-VIII short, multiple.

Genus.—The trumpet is normal, 0.36–0.71 mm in length, pinna rather short, truncate apically; seta 6-CT long, stout, usually light tan; 8-CT not longer and stouter than 9-CT, located well posterior to base of trumpet; 5-III not longer than following segment; 5-IV-V simple, not aciculate; 5-VI, VII very small; seta 6-VI well developed, usually stouter than 5-V; seta 9-VII

long, stout, usually branched; 4-VIII single or branched; segments IX and X without setae; paddle usually emarginate apically, with long fringe on outer and inner margins, with or without seta 1-P, when present, less than 0.5 length of paddle.

Subgenera.—Pupae of subgenus *Armigeres* have seta 6-CT usually as long as or longer than 7-CT; 3-CT and usually 1-CT long and very stout; seta 1-P mostly present and at least 0.3 length of paddle. In subgenus *Leicesteria* seta 7-CT at least 1.6 length of 6-CT; 1, 3-CT usually slender; 1-P absent or if present, no longer than fringe spicules.

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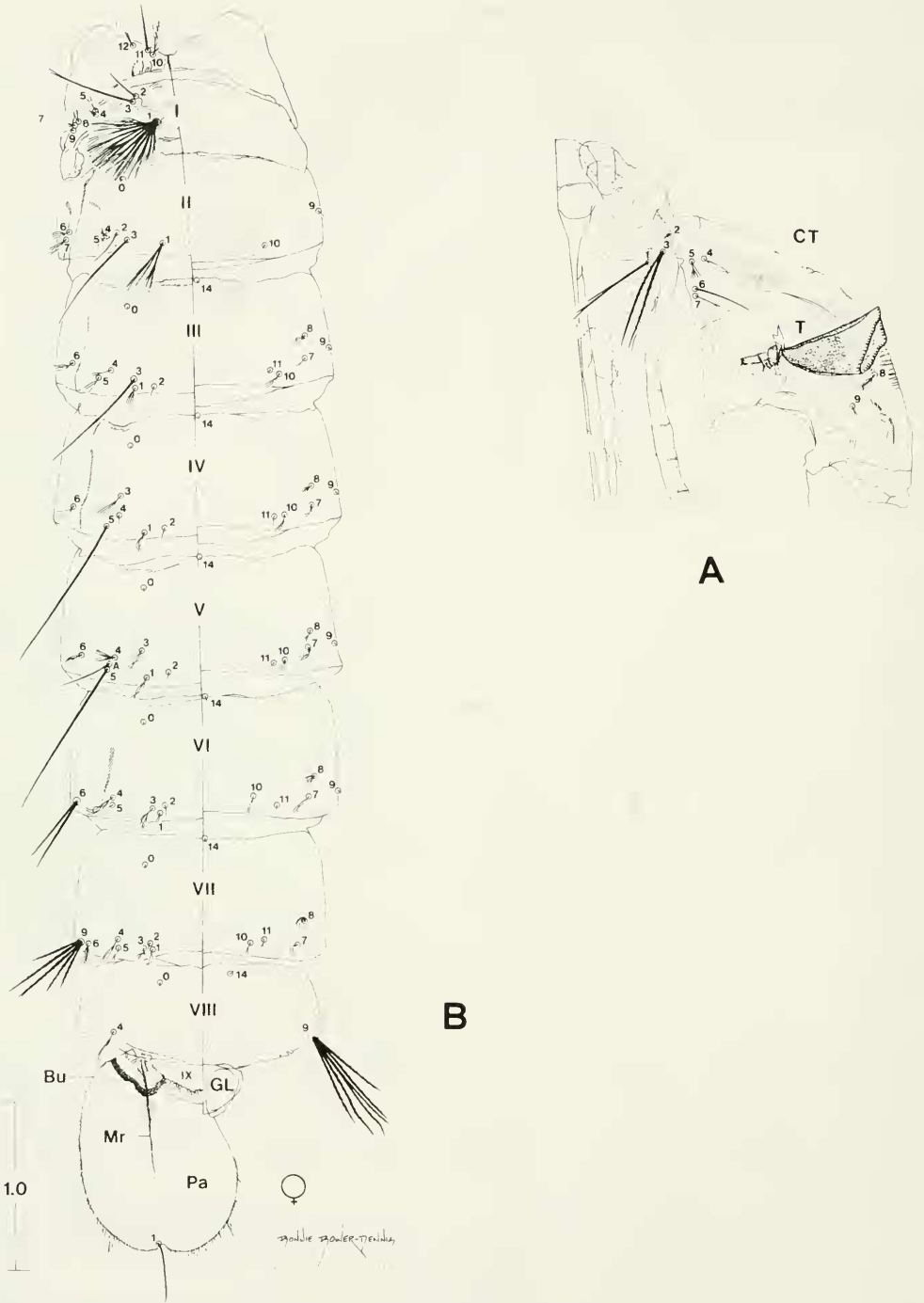


Fig. 5. Pupa of *Armigeres baisasi*. A, Cephalothorax. B, Metanotum and abdomen. For abbreviations see Fig. 1.

Table 5. Pupal chaetotaxy of *Armigeres baisasi*.

Seta	Cephalothorax	Abdominal Segments							
		I	II	III	IV	V	VI	VII	VIII
0	—	—	1	1	1	1	1	1	—
1	1-3 (1) ¹	9-13 (12)	10-18 (?)	2-4 (3)	2-3 (3)	3-4 (4)	2-3 (3)	1-2 (1)	—
2	2-4 (3)	1	1	1	1	1	1	1	—
3	1-2 (2)	1	1	1	1-5 (4)	3-5 (3)	2-4 (4)	2-4 (4)	—
4	2-6 (?)	3-7 (?)	3-6 (4)	1-6 (6)	1-5 (1)	3-7 (6)	3-6 (4)	3-4 (3)	2-4 (?)
5	3-6 (3)	2-4 (2)	1-3 (3)	1-3 (3)	1	1	1-4 (?)	2	—
6	1	3-6 (3)	3-4 (4)	1-4 (3)	3-4 (4)	3-4 (3)	1-2 (1)	2-4 (2)	—
7	1-3 (2)	3-5 (5)	4-7 (4)	2-5 (3)	2-4 (4)	3-6 (4)	3-5 (3)	2	—
8	3-4 (?)	—	1-2 (1)	4-5 (4)	3-5 (3)	2-3 (3)	2-5 (3)	3-6 (4)	—
9	2-4 (3)	1-2 (2)	1-3 (3)	1	1	1	1	2-5 (?)	6-8 (?)
10	3-6 (5)	—	1-3 (3)	2-3 (3)	2-3 (2)	2-3 (3)	1-5 (?)	1-3 (2)	—
11	1	—	—	1-3 (1)	1	1	1-2 (?)	1-3 (2)	—
12	2-4 (?)	—	—	—	—	—	—	—	—
14	—	—	—	1	1	1	1	1	1

¹ Range followed in parentheses by mode.

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